Clostridium difficile: methods and protocols

P. Mullany, A. P. Roberts eds. New York: Humana Press/Springer Verlag, 2010. ISBN 978-1-60327-364-0. 228 pp. €94.95. £85,50 (Hardback).

This book is Volume 646 of the 'Methods in Molecular Biology' series published by Humana Press, which is now part of the Springer Science and Business Media group. The series can be found in the Springer protocols website and individual chapters may be accessed there (www.springerprotocols.com). Indeed, it was possible to review the book online at the Springer main web page, although such a prospect did not appeal to this reader.

Following a review chapter on the clinical disease, the contents are what one would expect from a book concerned solely with practical methods (i.e., a sequential series of steps covering the methods in question, dotted with practical hints and tips). The book contains a strong emphasis on molecular genetic methods including typing (e.g., pulse-field gel electrophoresis, ribotyping, toxin typing of the PaLoc region), multilocus sequence typing (MLST; for evaluating more fundamental evolutionary genetic changes) and methods for studying gene control regions and comparative microarray analysis of the organism. As opposed to random mutagenesis, controlled gene manipulation has only become feasible within the past few years following the introduction of methods devised for clostridia in the laboratories of Nigel Minton and Julian Rood, and both get chapters on their respective methods.

There is little for those attempting to study the pathogenesis of *Clostridium difficile* with host epithelia, which perhaps reflects the difficulties of working with pathogens of the intestinal tract. Two experimental animal models are covered (guinea pig and mouse) as they yield different outcomes: aggressive disease in guinea pig and milder disease in the mouse. One chapter on human intestinal epithelial response includes protocols for real-time polymerase chain reaction (PCR) methods on tissue culture cells (e.g., Caco-2, HT-29, etc.) along with immuno-fluorescence imaging of tight junction (occludin) and a very scanty outline of what is needed to measure transepithelial electrical resistance. A couple of chapters do not provide any figures or data illustrating a typical experiment. Is it that useful to see a protocol for imaging occludin changes – not a dramatic visual change at the best of times – without knowing what to look for?

Another limitation to such books is that they tend to preach to the converted. The introductory sections for most chapters are too short to provide anything but the briefest of introductions to the methods. Space presumably prevents a critical review of the results and their interpretation. Thus, only someone who knows what MLST is will seek out the appropriate chapter. It would seem to me that replacing the first chapter on clinical disease with a more hard-nosed review of what the methods can and cannot do at the end of the book is more appropriate to the type of reader interested in experimental methodology.

Some of the figures and photomicrographs are poor (e.g., those on pages 12, 44, 113, 140, 141 and 208). These monochrome photomicrographs are close to useless, not due to the absence of colour but because the murky images fail to illustrate anything useful. However, the publisher tells me that something has gone wrong with the reproduction process, as the pictures should be in colour. So, while the book is physically very robust with a nice glossy hard cover, the smaller font text has that very slight tendency to break up in the Abstract sections of some chapters.

The target audience of such a book is probably not diagnostic laboratories. Only the chapter on isolation and cytotoxin testing (Michael Wren) originates from such a laboratory, but research laboratories will find it valuable. *C. difficile* has been an increasing clinical problem in the UK, if not further afield, and this is reflected in the predominantly UK/European authorship.

The practical and theoretical concerns presented by this organism have developed since the publication of the book. The evidence for the need for both or just one of the toxins to cause the disease in animals has continued. The nature and use of intestinal markers such as lactoferrin and bacterial enzymes (GDH) in faeces as predictors of infection have all been published subsequently. Assuming the chapters were written in 2008 (as judged from the latest references) these topics were not covered.

It is all too easy to say that this is a useful book for those interested in the organism, but that is probably true. I am quite sure that typing and MLST methods, for example, are generic and could be found in many other books. If so then a book on *C. difficile* should concentrate on methods specific to the organism in question (e.g., details of specific isolation methods, purification and labelling of the toxins, details of the sequenced genome) but then it can argued that the emphasis is on molecular genetic methods. A circular argument, no doubt.

In summary, specialists and beginners at the bench will want the collection of methods applicable to their organism to be found in one place, and that is what this type of book offers.

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Hematopathology: Genomic Mechanisms of Neoplastic Diseases

D. Crisan ed. Heidelberg: Springer Verlag, 2010. ISBN 978-1-60761-261-2. 370 pp. €159.95 (Hardback).

The past few decades have witnessed the slow and steady encroachment of 'practical' genetics into pathology. The present volume summarises the position for haematologists in a series of nine highly technical and unashamedly academic chapters.

The first sets the scene with an overview of molecular techniques, ranging from specimen collection and processing to the extraction of nucleic acids, and concludes with a description of seven types of polymerase chain reaction. Chapter 2 is devoted to classical and molecular cytogenetic analysis of haematolymphoid disorders, focusing on karyotypic and other methods for determining chromosome abnormalities (e.g., inversion, deletion, etc.). The principal technique in this area, fluorescence *in situ* hybridisation (FISH), is explained, and is then applied to diseases such as myelodysplastic syndrome, the leukaemias